Deaver (J. B.)

THE VALUE OF THE LEITER INCANDESCENT-LAMP URETHROSCOPE IN THE DIAGNOSIS AND TREATMENT OF CHRONIC URETHRAL DISCHARGES.

BY

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FROM

THE MEDICAL NEWS,

June 21, 1890.

[Reprinted from THE MEDICAL NEWS, June 21, 1890.]

THE VALUE OF THE LEITER INCANDESCENT-LAMP URETHROSCOPE IN THE DIAGNOSIS AND TREATMENT OF CHRONIC URETHRAL DISCHARGES.[1]

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HAVING used the Leiter incandescent-lamp urethroscope for some time with most gratifying results, both in the diagnosis and the treatment of chronic urethral discharges, I have felt that it would be of interest to present my views upon the advantages offered by this instrument, at the same time illustrating my remarks by the citation of a few of the many cases I have recorded in my case-book.

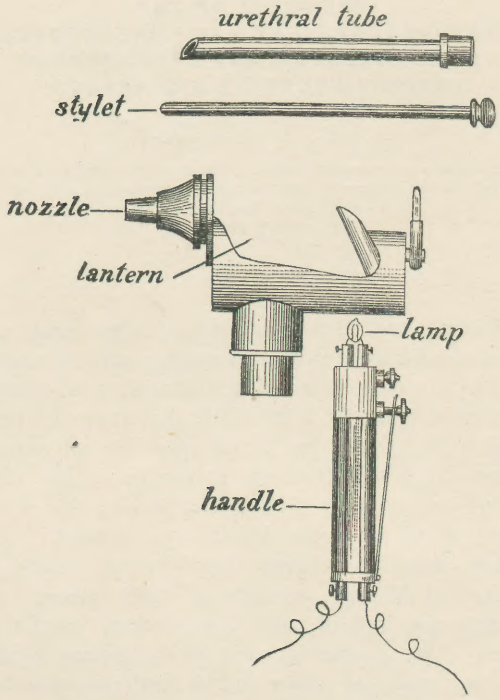
The incandescent-lamp urethroscope made by Leiter, of Vienna, consists of three pieces: the handle, the lantern, and the urethral canulæ or tubes. The handle is made of vulcanized rubber and has upon its upper end a small incandescent lamp, which is connected with the two binding-screws projecting from its lower end.

The light steel spring on the side is the key by

[1] Read before the American Medical Association, Section of Surgery, May 21, 1890.

which the current is connected and broken. The handle fits into the bottom of the lantern.

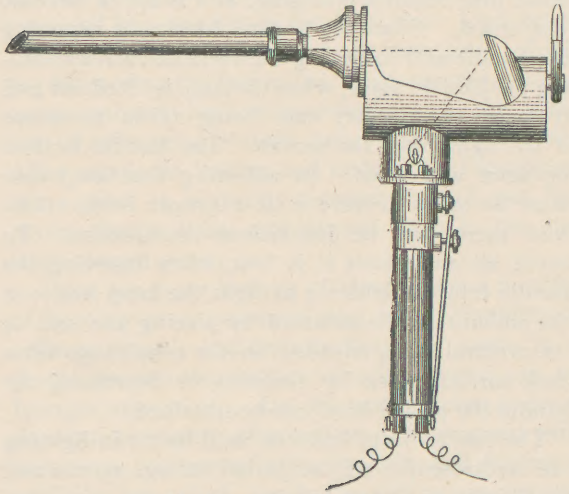
FIG. 1.



The lantern is a gutter-shaped box, roofless, having at one end, which I will call the ocular end, an obliquely placed concave mirror for the purpose of reflecting the light of the lamp along the urethral canula or tube, also a movable lens intended for

either long- or short-sighted observers. At the other end is a nozzle for fitting on the tubes. In addition to this are also noticed small perforations in the floor of the lantern immediately around the lamp, which are intended to carry off the heat. The urethral tubes are of different sizes, intended, of course, to be used in different sized urethræ. The larger the tube used the more satis-

FIG. 2.



Urethroscope ready for use.

factory will be the examination, and, if necessary, I do not hesitate to enlarge the meatus, which in most cases we find contracted, and this simple division will, in some instances, relieve the patient of the trouble which we are trying to learn the

nature of by the urethroscopic examination. The nearer the size of the tube approaches the normal calibre of the urethra, the less likely are we to overlook a fold which may be the seat of a small patch of disease. The mirror is to be so adjusted as to reflect the light along the tube.

The construction of this instrument is so simple that it very seldom gets out of order. The most delicate part is the lamp, which after being used some time requires changing, as it is apt to become blackened. Changing is done by simply removing the handle and loosening the two small screws holding the lamp in place, when the lamp is lifted out and replaced by another, care being taken to secure it by tightening the screws. The handle is then replaced and fixed. In adjusting the lamp care must be taken to have it at a proper level, otherwise there will be insufficient illumination. To avoid all annoyance it is best, when inserting the handle into the lantern, to light the lamp and test the amount of illumination by placing the end of the urethral tube, adjusted on the nozzle, against a dark surface, when by elevating or depressing the handle the proper level can be obtained.

The two forms of batteries used by me in lighting the urethroscope, are the Julian storage system and the Grenet or plunge battery.

The Grenet or plunge battery, which I prefer, is made by Mr. Flemming, of Philadelphia, and consists of a box containing two equal compartments, the first of which is occupied by a series of rubber cells, one-half filled with the following solution: potassium bichromate, 6 ounces; sulphuric acid, 5

fluidounces; water, 3 pints. This solution must be removed every two or four weeks, according to usage. The second compartment contains one large cell, the object of which is to catch the drip from the plates after their removal from the bichromate bath, and also to protect them.

These two compartments are covered by a bed, the under surface of which is divided into two equal parts, one half being covered by a sheet of rubber, to close the cells when not in use, and the other half occupied by a number of sets of plates. Each set is composed of two carbon and one zinc plate, which are fastened to the bed in the usual manner, and so connected as to have independent action, the number of cells being thrown into circuit as required. After using the battery and wishing to discontinue the current it is merely necessary to lift out the plates, change sides, and deposit them in the one large compartment.

Upon the upper surface of the bed are a number of binding-posts corresponding to the number of cells employed, and by attaching the cords in a proper manner the number of cells desired can be brought into circuit. On this surface there is also a rheostat, consisting of a rubber plate wrapped with silver wire, connected with the cells and having a swinging arm which can be moved to any part of the plate; the object of the rheostat I will speak of later.

The other form of battery used by me is made by Waite & Bartlett, of New York, and consists of a carrier or box, containing four large storage-cells, each of which is composed of a rubber cup, a series

of carbon and lead plates not in contact with each other, and contains a dilute solution of sulphuric acid which must be replenished from time to time. The materials used to connect these cells are narrow plates of lead, which are not acted upon by the sulphuric acid solution. The cells each measure two volts, and on increasing the voltage it is necessary to use a rheostat for reasons mentioned below.

There are two objections to the general use of the storage system. First, it must be charged from a dynamo, and second its weight (from 90 to 100 pounds) renders it inconvenient to carry.

The objects of using a rheostat are to govern the current, to prevent burning out of the lamp, and to measure the exact resistance of the lamp. It is a well-known fact that the carbons vary greatly in different lamps. In some the resistance is high, and such only burn when the rheostat is at its minimum; in others the resistance is so low that the lamps will not burn with a white light unless when the rheostat is at its maximum.

Manner of Using the Instrument.—In using the instrument the position of the patient which I have found most satisfactory is the recumbent one, on a table or couch of considerable height with the knees bent over the edges and slightly separated. The largest tube which the meatus will admit is now introduced, and passed gently through the urethra to the bulbo-membranous junction; unless obstruction is met with, when the stylet is withdrawn, the urethroscope adjusted, and the obstructing point examined. Great care is to be exercised in passing the tube, as it may induce bleeding, thus obstructing the

field of vision. Where we are dealing with a much inflamed urethra, we will necessarily be annoyed more or less by a few drops of blood, and when this occurs it can be gently removed by a pledget of cotton carried down the tube by the applicator. In case the pendulous urethra is found normal I carry the tube into the membranous urethra by depressing the proximal end, and in this way examine the deep urethra.

Normal Appearance of the Urethra.—When at rest the walls of the urethra are closely approximated and the lumen varies in shape at different parts of the canal.

Commencing at the bulb and extending to within an inch of the meatus, the lumen is transversely slightly oval; in the remaining portion it is either vertical or triangular, and at the meatus vertical. The color of the mucous membranes varies from a pale grayish or pale bluish-pink to a full, bright pink; generally it is very similar to the buccal and labial mucous membrane in the same individual. The brilliancy resembles that of the mouth. On slowly withdrawing the urethroscopic tube the walls of the urethra will be seen to contract behind it. One of the most important characteristics of the healthiness of the spongy urethra is the evenness with which its walls contract behind the retiring tube, or expand when it is advanced. A limited thickening in a small area will cause them to approximate irregularly. A scanty secretion of pus will destroy the lustre of the mucous membrane.

The lumen of the membranous urethra at the site of the anterior layer of the triangular ligament is

triangular, which is due to the walls being less elastic than in the spongy portion; elsewhere it is oval. Owing to the presence of the urethral crest (veru montanum) the lumen of the prostatic urethra is crescent-shaped.

All chronic discharges of the male urethra have been from time immemorial, and still are, known by the name "gleet." The opinions advanced as to the pathological conditions present in gleet in the absence of a well-marked stricture have been various, and not until recently has the proper aspect been given to these cases. The proper understanding of these conditions is solely due to the use of the urethroscope, which has been so perfected as to make the examination of the urethra, particularly the pendulous, membranous, and terminal portion of the prostatic, as satisfactory, and in every sense as reliable as is the examination of the eye-ground with the ophthalmoscope.

I believe, as does Professor Otis, that in the great majority of cases of gleet, one, and in some instances more than one stricture is present, which when situated in the pendulous urethra, the usual site, can be most satisfactorily demonstrated by the urethra-meter, and that the removal of the stricture by dilating internal urethrotomy will cure the greater number of such cases. I also believe that the minority of cases are not the result of stricture, and can be correctly diagnosed, and consequently successfully treated, by the use of the urethroscope. It has been my experience to see a few cases, where, after a complete dilating internal urethrotomy, the discharge continued, though not to as marked a degree as before

the operation, and where cure has promptly followed a few applications made to the affected portion of the urethra through the urethroscopic tube; also in cases where internal urethrotomy is practised I am able to hasten the cure by local applications.

What are the varieties of gleet (meaning any chronic urethral discharge) met with and clearly demonstrated by those who practise urethroscopy?

In my experience with the use of this instrument I have been able to demonstrate the following varieties of chronic urethritis:

1st. Simple chronic urethritis consisting of three different forms; one where the surface of the urethra is uniformly livid and moist; a second where, in addition to the above, are circumscribed areas involving the deeper portion of the urethra (the submucosa), resulting in the formation of nodular masses, slight, yet easily demonstrated by the absence of the normal elasticity of the urethra; and a third where there are circumscribed areas presenting a granular surface, covered, in many instances, with adherent pus and readily bleeding at the slightest touch, which is most probably that variety of urethritis described by some authors as granular.

2d. Follicular urethritis, where the inflammatory process is confined to the simple follicles, or the lacuna magna, and in some cases to the ducts of Cowper's glands.

3d. Ulcerative urethritis, never present except when associated with stricture, the treatment of which calls for division of the stricture (dilating internal urethrotomy), and local applications to the ulcer or ulcers made through the urethroscopic tube.

It is not uncommon to meet with two or more of the above conditions in the same case.

In the absence of the urethroscope, to ascertain the exact pathological condition which is keeping up the discharge is, in a large number of these cases at least, impossible. I have made the statement that, in my judgment, by far the greater number of such cases are the result of stricture; but, even so, a urethroscopic examination properly made tells us the actual condition of the urethra, both behind and at the strictured portion. The cases which I will now cite demonstrate the advantage of the instrument in the way of treatment.

Case I.—J. D., aged thirty-eight years, was admitted to the surgical wards of the Philadelphia Hospital, in February, 1890, with a purulent discharge from the urethra, and pain upon micturition. History of gonorrhœa for four years, followed by stricture. Was operated on in the winter of 1889, at Bellevue Hospital, by Dr. Keyes. Urethroscopic examination revealed a small ulcer, one-eighth of an inch in diameter, on the floor of the pendulous urethra immediately in advance of the bulbo-membranous junction. A solution of silver nitrate, 10 grains to the ounce, was applied through the urethroscopic tube by means of the applicator. Two more applications, at intervals of three days, were made, when the ulcer was entirely healed, resulting in the relief of all symptoms. The patient was kept under observation for one month, when he was discharged cured. This ulcer was evidently the result of the stricture, but, unlike it, was not cured by the internal urethrotomy, which, I believe, would often be found to be the case were a

careful urethroscopic examination made in many of those cases where the discharge is still present.

CASE II.—C. D.; private patient; came under my care some months since, with a history of gleet of two years' standing. During this time, he says, he had several attacks of gonorrhœa immediately following connection; these were evidently not attacks of true gonorrhœa, but simply aggravations of the existing urethritis, the result of the venereal act. Examination of the deep urethra with the *bougie-à-boule* and of the pendulous urethra with the urethra-meter revealed the absence of stricture. This examination was followed by some bleeding. Urethroscopic examination revealed chronic urethritis, with three distinct granular points on the floor of the pendulous urethra, 2½ inches anterior to the bulbo-membranous junction. The granular patch nearest the meatus bled freely when touched.

Four applications of a 20-grain solution of silver nitrate were made at intervals of five days. In addition to the application of silver solution, the patient used the following injection four times daily: sulphocarbolate of zinc, 12 grains; sulphate of morphine, 4 grains; distilled water, 4 ounces. At the end of three weeks, all symptoms having subsided, treatment was suspended. The patient reported two weeks later, when a urethroscopic examination showed the urethra to be normal.

CASE III.—W. H.; private patient; came to me suffering from a chronic urethral discharge of four years' standing, as a result of a very severe attack of gonorrhœa. Three years ago he was examined by a genito-urinary specialist, who found a stricture of large calibre in the pendulous urethra. This specialist cut the stricture by dilating internal urethrotomy, since which time the patient has been passing, at stated intervals, a No. 36 (French scale) bougie.

During the past three years, the patient states, he has had several attacks of gonorrhœa of a mild type, but these were evidently attacks of so-called bastard gonorrhœa. Examination for stricture showed the urethra to be normal throughout. Urethroscopic examination of pendulous urethra was negative, except at the point which had been the seat of the stricture; here there was an absence of the normal elasticity, particularly well marked on the floor. Examination of the membranous urethra showed the mucous membrane of the anterior part of the floor to be dark red and presenting a distinctly granular area, bleeding upon the slightest touch. In the light of this examination I made instillations, of 5 minims each, of a 20-grain solution of silver nitrate, six in all, into the deep urethra with the Ultzman drop-catheter, at intervals of three days. This treatment not proving satisfactory, I brought into the field of vision the granular area, and made two applications through the urethroscopic tube, this sufficing to accomplish the desired end. Some weeks since the patient wrote me that he was well.

Case IV.—G. G.; private patient; contracted his first attack of gonorrhœa in 1883. It ran through the three stages, and had all the characteristic symptoms of genuine acute urethritis. The treatment consisted of balsam of copaiba internally and various injections; it lasted four months. In 1884 he contracted a second attack, which did not differ from the first, excepting that it lasted six months.

In 1886 he contracted a third attack, which was by no means as pronounced as either of the previous. He had merely a discharge which differed from that of the other attacks in being thinner and whiter. The treatment was internal only, and consisted of paste of the balsam of copaiba and of cubebs, for two weeks.

He did not have connection nor did he drink any spirituous liquors for one month after the discharge stopped; when having transgressed from the path of virtue, upon the day following he had a return of the discharge. There was neither pain nor discomfort other than that occasioned by the presence of the discharge. He was again treated by balsam of copaiba internally and by injections, but not improving as rapidly as his medical attendant thought he should, the systematic passage of steel bougies in connection with the above treatment was begun. The medication was continued until the patient's stomach would no longer tolerate the balsam, when it was omitted, the bougieing and injections being persisted in. Three months from the institution of the treatment, the patient remaining abstemious, there was still enough discharge to make him despair as well as seek other advice.

In July 1888, I was consulted, and examination then showed a slight gleety discharge. Calibre of urethra 36 millimetres. Stricture 3½ inches within the meatus, calibre 34 millimetres. At this time, not having a urethroscope with which to make an examination of the urethra, I believed the discharge was caused by the stricture of large calibre present. I advised the passage of solid bougies and injection *brou* (French formula), hoping in this way to restore the normal condition of the urethra. This treatment was used faithfully for five months. In December there being no longer any discharge I stopped passing bougies and discontinued the injection, which had been changed from injection *brou*, several different formulæ having been used. I advised that a No. 35 solid bougie be procured and passed once a week for some time.

In August, 1889, I was again consulted for an epididymitis of left testicle, following the passage of

the bougie. This attack of epididymitis confined the patient to house for one week, when the discharge again returned. As soon as the epididymitis had cleared up I examined the urethra with urethrameter, finding it trespassed upon to a little less than one millimetre at site of original stricture. Examination of urine showed presence of a few pus corpuscles and some shreds of mucus. Examination of prostate through rectum was negative. Believing the cause of the trouble to be chronic inflammation of the deep urethra, I used instillations of solution of silver nitrate, varying in strength from 10 to 20 grains to the ounce, using the Gross instrument.

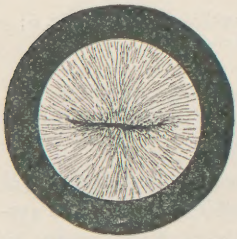
In a very short time the discharge disappeared, only to reappear after taking a glass or two of beer. In the fall of 1889, a urethroscopic examination showed the cause of the trouble to be chronic urethritis with granular areas in the membranous urethra. Treatment like that I have detailed proved in a short time entirely satisfactory.

The citation of these four cases, I think, is sufficient to support what I have intended to convey by the title of this paper.

In addition to the value of this instrument in the diagnosis and treatment of chronic urethral discharges, I desire to call attention to what, by its use, I believe I have demonstrated to be a cause of failure in obtaining cure in a certain number of cases of stricture operated upon by divulsion, and which I think is an argument in favor of dilating internal urethrotomy (the operation I strongly advocate where it is feasible), as the cause of failure cannot result from the cutting operation, if properly done. I refer to tabs or teats of mucous membrane which

have been separated at the time of the divulsion; and by bougieing, the usual after-treatment instituted in these cases, the union of these tabs to the surface from which they were torn has been prevented. In two cases coming under my care recently, I have found the following conditions as here shown in the diagrams.

FIG. 3.

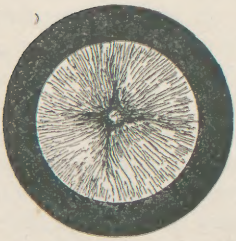


Normal urethra.

FIG. 4.

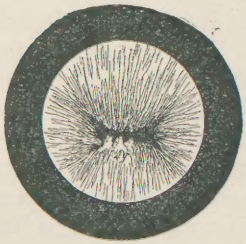
Teat-like prominence of urethral mucous membrane.

FIG. 5.



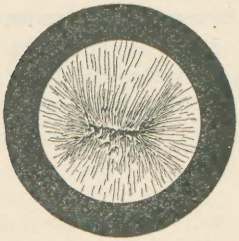
Same as Fig. 4. Point of prominence showing in the centre.

FIG. 6.



Multiple projections of mucous membrane into the urethra.

FIG. 7.



Multiple small projections into the urethra. Same as Fig. 6; tube partly withdrawn.

This condition, in my judgment, granting that all of the strictured area has been removed, is quite sufficient to keep up a discharge.

The routine treatment of cases of chronic urethral discharge is by injections, soluble bougies, the systematic passage of solid bougies, and internally by the administration of stimulating blennorrhagics, until the patient's stomach will no longer tolerate them, and with, in many cases, little or no effect. It is evident to all that this form of treatment will no doubt modify the condition, and will cure a few cases. The advantage offered by the method advocated in this paper is, that we are with certainty able to deal with the diseased point or points, it being necessary only in a very few to trespass upon the prostatic urethra proper, which is always done in the ordinary routine practice of introducing the bougie into the bladder, thereby exposing the prostate gland to injury, as well as endangering the patient to an attack of epididymitis.

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